

IN THE CLAIMS:

Please AMEND Claims 1, 13, 15, 20, 66, 73, 80-82, 86-89, 91, and ADD new Claim 92 as follows. For the Examiner's convenience, all claims currently pending in the application are presented below:

1. (Currently Amended) A gas laser device, comprising:
  - a chamber for ~~sealingly storing~~ confining a laser gas therein;
  - a discharging ~~electrode~~ electrodes for exciting the laser gas through electrical discharging;
  - a total reflection mirror for totally reflecting laser light produced by the electrical discharging from said discharging electrode;
  - an output ~~window~~ half-mirror for partially reflecting the laser light and for outputting a portion of the laser light amplified between said total reflection mirror and said output ~~window~~ half-mirror spaced for resonant reflection of the laser light;
  - a blower for ~~circulating~~ recirculating the laser gas within said chamber, ~~so that the laser gas passing through~~ an electrical discharging region of said discharging electrode electrodes is circulated in said chamber and is returned to the electrical discharging region of said discharging electrode; and
  - operating means for operating said blower rotation in accordance with responsive to a state of the electrical discharging from said discharging electrode electrodes being in one of a stand-by state and an in-operation state, including first means for operating the blower rotation in [[a]] the stand-by state in which no laser gas is excited by the electrical discharging from said

discharging ~~electrode electrodes~~ and thus no laser light is emitted whereas the gas laser device is in a condition to output for outputting the laser light, and second means for operating the blower rotation in ~~[[an]]~~ the in-operation state in which the laser gas is excited by the electrical discharging from said discharge ~~electrode electrodes~~ and to output the laser light ~~is being~~ outputted.

2. (Previously Presented) A gas laser device according to Claim 1, wherein said first means operates rotation of said blower when said gas laser device is in the stand-by state by stopping the blower.

3. (Previously Cancelled)

4. (Previously Presented) A gas laser device according to Claim 2, wherein said blower has a blowing blade rotatably supported within said chamber.

5. (Previously Presented) A gas laser device according to Claim 1, wherein said laser device comprises a noble gas halide excimer laser.

6. (Previously Presented) A gas laser device according to Claim 5, wherein said noble gas halide excimer laser comprises an XeCl excimer laser.

7. (Previously Presented) A gas laser device according to Claim 1, further comprising an exposure apparatus for exposing a substrate to the laser light supplied from said gas laser device.

8. (Previously Presented) A gas laser device according to Claim 7, wherein said first means operates rotation of said blower when said gas laser device is in the stand-by state by stopping the blower.

9. (Previously Cancelled)

10. (Previously Presented) A gas laser device according to Claim 8, wherein said blower has a blowing blade rotatably supported within said chamber.

11. (Previously Presented) A gas laser device according to Claim 8, wherein said laser device comprises a noble gas halide excimer laser.

12. (Previously Presented) A gas laser device according to Claim 11, wherein said noble gas halide excimer laser comprises an XeCl excimer laser.

13. (Currently Amended) An exposure apparatus, comprising:  
a laser light source having (i) a chamber for ~~sealingly storing~~ confining a laser gas therein, (ii) ~~[[a]]-discharging electrode~~ electrodes for exciting the laser gas through electrical

discharging, (iii) a total reflection mirror for totally reflecting laser light produced by the electrical discharging from said discharging ~~electrode~~ electrodes, (iv) an output window half mirror for ~~partially~~ reflecting the laser light and for outputting a portion of the laser light reflected between said total reflection mirror and said output window half-mirror spaced for resonant reflection of the laser light, and (v) a blower for ~~circulating~~ recirculating the laser gas within said chamber ~~so that the laser gas passing through~~ an electrical discharging region of said discharging ~~electrode~~ electrodes ~~is circulated in said chamber and is returned to the electrical discharging region of said discharging electrode;~~

a main assembly for exposing a substrate to the laser light from said laser light source; and

operating means for operating said blower in accordance with a state of electrical discharging of ~~response to~~ said discharging ~~electrode~~ electrodes being in one of a non-exposure stand-by state and an exposure operating state including first means for operating rotation of the blower in ~~[[a]]~~ the non-exposure-operating stand-by state in which no laser gas is excited by the electrical discharging from said discharging ~~electrode~~ electrodes ~~and thus no laser light is emitted whereas the exposure device is in a condition to output~~ for outputting the laser light, and second means for operating rotation of the blower in ~~[[an]]~~ the exposure operating state in which the laser gas is excited by electrical discharging from said discharging ~~electrode~~ electrodes ~~and to output~~ the laser light is being outputted.

14. (Previously Amended) An apparatus according to Claim 13, wherein said operating means further comprises means for increasing a rotation speed of said blower in

response to a start of an exposure job in which the exposure operation is performed through said main assembly.

15. (Currently Amended) An apparatus according to Claim 14, wherein said operating means stops the ~~revolution~~ rotation of said blower ~~before~~ in the absence of the [[a]] start of the exposure job.

16. (Previously Cancelled)

17. (Previously Presented) An apparatus according to Claim 15, wherein said blower has a blowing blade rotatably supported within said chamber.

18. (Previously Presented) An apparatus according to Claim 13, wherein said laser light source comprises a noble gas halide excimer laser.

19. (Previously Presented) An apparatus according to Claim 18, wherein said noble gas halide excimer laser comprises an XeCl excimer laser.

20. (Currently Amended) A ~~semiconductor device manufacturing~~ gas laser operating method comprising:

~~sealingly storing~~ confining a laser gas in a chamber;

exciting, using [[a]] discharging ~~electrode~~ electrodes, the laser gas through

electrical discharge;

totally reflecting laser light produced by the electrical discharging from said discharging ~~electrode~~ electrodes by a total reflection mirror;

~~partially reflecting the laser light by an output window~~ half-mirror and outputting a portion of the laser light reflected between said total reflection mirror and said output window half-mirror spaced for resonant reflection of the laser light;

~~circulating~~ recirculating, using a blower, the laser gas within the chamber, ~~so that the laser gas passing through an electrical discharging region of the discharging electrode electrodes is circulated in the chamber and is returned to the electrical discharging region of the discharging electrode;~~ and

operating rotation of the blower ~~in accordance with~~ responsive to a state of ~~electrical discharging from said discharging electrode electrodes being in one of a stand-by state and an in-operation state~~ including operating rotation of the blower in ~~[[a]]~~ the stand-by state in which no laser gas is excited by the electrical discharging from said discharging ~~electrode electrodes~~ and thus no ~~for outputting~~ laser light is emitted whereas the chamber is in a condition to output the laser light, and differently operating rotation of the blower in ~~[[an]]~~ the in-operation state in which the laser gas is excited by the electrical discharging from said discharge ~~electrode electrodes~~ and to output the laser light is being outputted.

21. (Previously Presented) A gas laser device according to Claim 1, wherein said laser device comprises an F<sub>2</sub> laser.

22. (Previously Presented) A gas laser device according to Claim 5, wherein said noble gas halide excimer laser comprises a KrF excimer laser.

23. (Previously Presented) A gas laser device according to Claim 5, wherein said noble gas halide excimer laser comprises an ArF excimer laser.

24. (Previously Presented) A gas laser device according to Claim 8, wherein said laser device comprises an F<sub>2</sub> laser.

25. (Previously Presented) A gas laser device according to Claim 11, wherein said noble gas halide excimer laser comprises a KrF excimer laser.

26. (Previously Presented) A gas laser device according to Claim 11, wherein said noble gas halide excimer laser comprises an ArF excimer laser.

27. (Previously Presented) An apparatus according to Claim 13, wherein said laser light source comprises an F<sub>2</sub> laser.

28. (Previously Presented) An apparatus according to Claim 18, wherein said noble gas halide excimer laser comprises a KrF excimer laser.

29. (Previously Presented) An apparatus according to Claim 18, wherein said noble gas halide excimer laser comprises an ArF excimer laser.

30 - 65. (Previously Cancelled).

66. (Currently Amended) A gas laser device, comprising:  
~~an exciting region to which a laser gas is supplied;~~  
~~exciting means for exciting a laser gas;~~  
laser gas supplying means for supplying a laser gas to ~~said~~ an exciting region;  
exciting means for exciting the laser gas supplied to the exciting region; and  
control means for controlling ~~operation states of~~ said laser gas supplying means  
and ~~said exciting means, for providing on the basis of whether the~~ laser gas excitement and laser  
gas non-excitement is to be excited by said exciting means or not.

67. (Previously Presented) A laser gas device according to Claim 66, wherein said laser gas supplying means includes a blower.

68. (Previously Presented) A laser gas device according to Claim 67, wherein said control means controls a number of revolutions of said blower.

69. (Previously Presented) A laser gas device according to Claim 66, wherein said exciting means includes two discharging electrodes disposed to sandwich said exciting



region therebetween.

70. (Previously Presented) A laser gas device according to Claim 69, wherein said exciting means further includes a resonator.

71. (Previously Presented) A laser gas device according to Claim 70, wherein said resonator comprises a pair of mirrors.

72. (Previously Presented) A laser gas device according to Claim 71, wherein said pair of mirrors includes a total reflection mirror.

73. (Currently Amended) An exposure apparatus, comprising:

a gas laser device including (i) ~~an exciting region to which a laser gas is to be supplied, (ii) exciting means for exciting a laser gas, and (iii) laser gas supplying means for supplying a laser gas to said an exciting region~~[[;]], and (ii) exciting means for exciting the laser gas supplied to the exciting region; and

control means for controlling ~~operation states of said laser gas supplying means and said exciting means for providing~~ on the basis of whether the laser gas excitement and laser gas non-excitement is to be excited by said exciting means or not.

74. (Previously Presented) An apparatus according to Claim 73, wherein said laser gas supplying means includes a blower.

75. (Previously Presented) An apparatus according to Claim 74, wherein said control means controls a number of revolutions of said blower.

76. (Previously Presented) An apparatus according to Claim 73, wherein said exciting means includes two discharging electrodes disposed to sandwich said exciting region therebetween.

77. (Previously Presented) An apparatus according to Claim 76, wherein said exciting means further includes a resonator.

78. (Previously Presented) An apparatus according to Claim 77, wherein said resonator comprises a pair of mirrors.

79. (Previously Presented) An apparatus according to Claim 78, wherein said pair of mirrors includes a total reflection mirror.

80. (Currently Amended) A gas laser device comprising:  
a chamber for ~~sealingly storing~~ confining a laser gas therein;  
a discharging ~~electrode~~ electrodes for exciting the laser gas through electrical

discharge;

a total reflection mirror for amplifying laser light produced by the electrical discharging from said discharging ~~electrode~~electrodes;

an output ~~window~~ half-mirror for amplifying the laser light and for outputting a portion of the laser light amplified between said total reflection mirror and said output ~~window~~ half-mirror spaced for resonant reflection of the laser light;

~~circulation means for circulating~~ recirculating means for recirculating the laser gas within said chamber, ~~so that the laser gas passing through~~ an electrical discharging region of said discharging ~~electrode~~ electrodes ~~is circulated in said chamber and is returned to the electrical discharging region of said discharging electrode~~; and

control means ~~adapted to control said circulation means in accordance with a state of the electrical discharging from said discharging electrode~~ for controlling said recirculating means responsive to said discharging electrodes being in one of a stand-by state and an in-operation state so as to provide a first gas circulation ~~capacity~~ in ~~[[a]]~~ the stand-by state in which no laser gas is excited by the electrical ~~discharge~~discharging from said discharging ~~electrode~~ electrodes for outputting laser light and thus no laser light is emitted whereas an output of the laser light is being prepared, and a second gas circulation ~~capacity~~ in ~~[[an]]~~ the in-operation state in which the laser gas is excited by the electrical ~~discharge~~ discharging from said discharging ~~electrode and~~ electrodes to output the laser light ~~is being outputted~~.

81. (Currently Amended) A gas laser device according to Claim 80, wherein said control means is operable to cause gas circulation by said ~~circulation~~ recirculation means to stop

when said ~~gas laser device is~~ said discharging electrodes are in the stand-by state.

82. (Currently Amended) A gas laser device according to Claim 80, wherein said ~~circulation~~ recirculation means includes a blower provided within said chamber.

83. (Previously Presented) A gas laser device according to Claim 82, wherein said blower has a blower blade rotatably supported within said chamber.

84. (Previously Presented) A gas laser device according to Claim 80, wherein said gas laser device comprises one of a noble gas halide excimer laser and an F<sub>2</sub> laser.

85. (Previously Presented) A gas laser device according to Claim 84, wherein said noble gas halide excimer laser comprises one of an XeCl excimer laser, a KrF excimer laser, and an ArF excimer laser.

86. (Currently Amended) An exposure apparatus comprising:  
~~a gas laser device according to Claim 80;~~  
~~a main assembly for exposing a substrate with laser light from said gas laser~~  
~~device; and~~  
~~control means operable to control the gas circulation capacity of the circulation~~  
~~means of the gas laser device to provide a first gas circulation capacity in an exposure-operation~~  
~~state of the exposure apparatus, and a second gas circulation capacity in a non-exposure-~~  
~~operation state of said exposure apparatus~~

a laser light source that includes (i) a chamber for confining a laser gas therein, (ii) discharging electrodes for exciting the laser gas through electrical discharge, (iii) a total reflection mirror for amplifying laser light produced by the electrical discharging from said discharging electrodes, (iv) an output half-mirror for amplifying the laser light and for outputting a portion of the laser light amplified between said total reflection mirror and said output half-mirror spaced for resonant reflection of the laser light, and (v) recirculation means for recirculating the laser gas within said chamber, through an electrical discharging region of said discharging electrodes;

a main assembly for exposing a substrate to the laser light from said laser light source; and

control means for controlling said recirculation means responsive to said discharging electrodes being in one of a non-exposure-operating state and an exposure state, so as to provide a first gas circulation in the non-exposure-operating state, in which no laser gas is excited by the electrical discharging from the discharging electrodes for outputting laser light, and a second gas circulation in the exposure state in which the laser gas is excited by the electrical discharging from the discharging electrodes to output the laser light.

87. (Currently Amended) An apparatus according to Claim 86, wherein said control means is operable to increase the gas circulation capacity of said ~~circulation~~ recirculation means in response to a start of an exposure job ~~signal~~ in which the exposure operation is performed through said main assembly.

88. (Currently Amended) An apparatus according to Claim 87, wherein said control means is operable to stop said ~~circulation~~ recirculation means ~~before the start of the exposure job signal~~ in the absence of start of the exposure job.

89. (Currently Amended) An apparatus according to Claim 88, wherein said ~~circulation~~ recirculation means includes a blower provided within said chamber.

90. (Previously Presented) An apparatus according to Claim 89, wherein said blower has a blower blade rotatably supported within said chamber.

91. (Currently Amended) A semiconductor device manufacturing method comprising the steps of:

lithographically transferring a predefined pattern onto a substrate by use of an exposure apparatus according to Claim 86; and

manufacturing a semiconductor device from the patterned substrate,

wherein said exposure apparatus includes (I) a laser light source that includes (i) a chamber for confining a laser gas therein, (ii) discharging electrodes for exciting the laser gas through electrical discharge, (iii) a total reflection mirror for amplifying laser light produced by the electrical discharging from said discharging electrodes, (iv) an output half-mirror for amplifying the laser light and for outputting a portion of the laser light amplified between said total reflection mirror and said output half-mirror spaced for resonant reflection of the laser light, and (v) recirculation means for recirculating the laser gas within said chamber, through an

electrical discharging region of said discharging electrodes; (II) a main assembly for exposing a substrate to the laser light from said laser light source; and (III) control means for controlling said recirculation means responsive to said discharging electrodes being in one of a non-exposure-operating state and an exposure state, so as to provide a first gas circulation in the non-exposure-operating state, in which no laser gas is excited by the electrical discharging from said discharging electrodes for outputting laser light, and a second gas circulation in the exposure state in which the laser gas is excited by the electrical discharging from the discharging electrodes to output the laser light.

92. (New) A semiconductor manufacturing method, comprising the steps of:  
transferring a predefined pattern onto a substrate by use of an exposure apparatus;  
and  
manufacturing a semiconductor device from the patterned substrate,  
wherein the exposure apparatus includes (I) a gas laser device having (i) laser gas supplying means for supplying a laser gas to an exciting region, and (ii) exciting means for exciting the laser gas supplied to the exciting region; and (II) control means for controlling said laser gas supplying means on the basis of whether the laser gas is to be excited by said exciting means or not.